Unmanned vehicles rolled out

The DoD Joint Robotics Program formally rolled out the first two experimental unmanned vehicles (XUV) at a recent exercise at Aberdeen Proving Ground, MD, for the Unmanned Ground Vehicle DEMO III. The DEMO III program is being managed by ARL.

It was the first of three exercises designed to demonstrate the advances of mobile robotics technology. Later exercises are scheduled for October, 2000 and September, 2001.

Congress created the Joint Robotics Program in 1989 to consolidate all DoD acquisition related robotics efforts. Robots are expected to serve as force multipliers on the future battlefield augmenting human forces in high-risk missions. They will also expand a unit's capabilities by increasing situational awareness, providing remote fires on demand and reducing the logistics burden by shrinking the size of combat vehicles.

A major thrust of the program is to integrate new technologies on the testbed vehicles. Demo III is also strongly customer-driven, placing major emphasis upon user participation and feedback. The effort is directed at continuous evaluation of technology in an operational setting combined with development of military tactics, techniques and procedures that will intelligently employ unmanned systems on the battlefield. Interaction between the robots and the soldiers is a major criterion so soldiers will be able to supervise operation of the robots rather than directly control them.

Currently, the vehicles are capable of cross county travel of about 10 MPH during the day and five MPH at night. They have a communications range of about eight kilometers and are capable of mapping terrain. Each has sensor packages that include Forward Looking Infrared, radar and LADAR, acoustic and vision sensors as well as vision processing systems that enable the vehicles to cooperate in a search of an area and "hand off" target tracking from one vehicle to another. The enhanced XUVs that will come later will be equipped with more radars, infrared and acoustic devices.

Target goals for the Final Demo III exercise will be to have troops experiment with the small, highly agile, unmanned vehicles. By then, the vehicles should be capable of off-road, semi-autonomous operation at speeds up to 32 kilometers per hour during the day and 16 kilometers per hour at night. These capabilities will be integrated with navigation, mission planning and target acquisition technologies that will provide a meaningful assessment of the potential of autonomous robotic ground vehicles for the future battlefield.

Many of the Demo III initiatives have benefited from and will provide technology transfer to a number of other defense and civil robotic vehicle development programs.

Other participants in the program include:

The Army Tank Automotive Research, Development and Engineering Center; the Night Vision and Electronic Sensor Directorate of the Army Communications-Electronics Command; the Army Aviation and Missile Command's Unmanned Ground Vehicle/System Joint Project Office; the National Institute for Standards and Technology, the Army Mounted Maneuver Battle Laboratory, General Dynamics Robotic Systems, Science Applications International Corp., Sarnoff Corp. and NASA's Jet Propulsion Laboratory.

Researchers play major role in keeping chopper fleet in air

The Army Research Laboratory played a part in keeping the CH-47 Chinook helicopter fleet in the air.

The CH-47 fleet was grounded when cracks due to grinding burns were discovered on the second stage planetary gears during routine inspections.

Lewicki of ARL's Vehicle Technology Directorate and Scott Grendahl of the Materials Analysis Group of ARL's Weapons and Materials Research Directorate, participated.

The Army is now operating the CH-47 fleet on a limited performance basis until a full inspection of the suspected parts is completed

In addition, the Material Analysis Group and Boeing Corp., contractor for the helicopter, are conducting fatigue studies and a metallurgical analysis.

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